

# Waqā Tabu—sacred ships: the Fijian *drua*

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Peter Nuttall, Paul D’Arcy and Colin Philp

## Abstract

The Fijian *drua* (also called *kalia* in Tonga and ‘*alia*’ in Samoa) are arguably the apex of Pacific naval architectural design and performance, built without metals, some over 100’ long, carrying complements of more than 200, capable of speeds of around fifteen knots and of sailing within four points of the wind. There is currently no single literature source for *drua* and the discourse on central Oceania’s sailing heritage has been overshadowed in recent decades by intensive research into eastern Polynesia vessels and voyaging. Amongst the scattered literature there is disagreement between authors as to the historical and pre-historical extent, ability and source of Fijian sailing culture. We collate and assess the known literature for *drua*, drawing out areas of commonalty and discord to place this within the context of culture, with canoe as focal point. We examine the unique role of the *vesi loa* (*Intsia bijuga*) growing on the limestone islands of the southern Lau Group, a boat-building material described as the titanium of the Pacific, as a magnet for master craftsman from Samoa, Tonga and Fiji and the resultant cross-cultural exchange that produced a craft that was arguably the finest performance hulled ship of her day. No great *drua* has been built in over a century. We conclude that the nature of the *drua* culture described requires a more generous assessment of Fijian voyaging ability and history than currently exists in the literature. Regardless of its design origin, the *drua* in its finished form was the product of a unique and indigenous cross-cultural collaboration that includes at least the societies of central and northern Oceania.

## Keywords

Central Oceania, *drua*, Fiji sailing heritage, sacred canoes, Waqā Tabu

We carry the cultural and historical inheritance of ocean navigators of peerless skill  
and their courageous kin who crossed vast distances before the tribes of  
Europe had ventured forth from their small part of the earth.

Ratu (Sir) Kamisese Mara<sup>1</sup>

1. Opening Address, Pacific Vision Festival, Auckland, New Zealand, 26 July 1999.

## Corresponding author:

Paul D’Arcy, Senior Fellow in Pacific History, Australian National University, Canberra, Australia.

Email: paul.darcy@anu.edu.au

Fiji is something of an enigma in Pacific maritime history. Academic study of the maritime dimension of Central Pacific indigenous history has largely been focused on the achievements of Tongan ocean-borne imperialism, to the neglect of detailed studies of Fijian and Samoan maritime capabilities. The reason for this perhaps lies in the fact that the height of Tongan influence in the eastern Fijian archipelago in the mid-nineteenth century coincided with the rise of European settlement, Western naval expeditions to protect the interests of their nationals resident in Fiji, and increasing calls for British intervention to protect settlers and to protect the Bauan polity from Tongan intrusions and American punitive expeditions. Most Pacific historians have been interested in the drama of culture contact between Europeans and Pacific Islanders, and in the foundation of colonial relationships that have so shaped the modern Pacific. Such perspectives marginalize indigenous-centered histories by privileging embryonic national/colonial political histories over local histories centered on mobile interaction between fluid social and political groups forever mediated by their relationship to the sea.

Chiefly power and group *mana* were intimately linked to these environmental, social and economic relationships—relationships and priorities that endured well into the colonial era. Voyaging *Waqā Tabu* (sacred canoes) or *drua* were central to this indigenous dynamic. There is currently no single comprehensive literature source for *drua* and the wider subject of Fijian sailing culture and history is dispersed across a variety of sources.<sup>2</sup> The phrase ‘*drua* culture’ is used throughout as shorthand for this and includes vessels, sailing, navigation, and all related aspects of culture. The word ‘*Drua*’ comes from the words *Dua* meaning *one* and *Rua* meaning *two*. So *Drua* basically means ‘two but one’ or two ‘different’ hulls coming together as one vessel.

Morphologically, there is little design difference between the later vessels of Fijian, Tongan and Samoan ownership. This is not to say there are no differences in the operational or socio-cultural attributes of *drua* between the cultures. The literature on Fijian sailing culture is sparse and scattered relative to other ‘canoe’ cultures of Oceania.<sup>3</sup> Neither Fiji’s *drua* culture nor the related culture in central Oceania has been the subject of the intensive research of Eastern Polynesia with its focus on long-distance migration and debate over drift versus planned migration and return voyaging capacity. There is disagreement between authors as to the historical and pre-historical extent, ability and source of Fijian sailing culture. As the *drua* is agreed by all commentators to be virtually identical in design and handling to the Tongan *kalia* and Samoan *ʻalia*, references pertaining to *kalia* and *ʻalia* are also included in this article along with references to Tongan, Samoan and Fijian relationships in the critical mid-1700–1900 period.

In arguing that *drua* represented a height in Oceanic canoe building, we seek to decolonize Pacific history by moving the predominant lens beyond the obsession with

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2. Where there is no necessity to distinguish between the country (or culture) of ownership, the class of *drua/kalia/ʻalia* collectively is referred to as *drua*. *Ndrua* and *drua* are interchangeable spellings as are *thamakau* and *camakau* in the archival material.
  3. The signifier ‘canoe’ has been used generically since European contact to describe what were often massive, blue-water, long-range, planked-hull sailing vessels; it is now so ingrained in the literature as to defy re-branding. The term ‘vessel’ is used here rather than ‘canoe’ where possible.

European priorities and European interactions with Pacific Islanders and back to the processes which indigenous communities devoted the most time and resources – the construction of *Waqa Tabu*. The seafaring and canoe-building achievement of the region centered on Fiji's eastern islands calls for a reorientation of Fijian history and its methodology and sources to produce a Fiji-centered history based on Fijian priorities as a seafaring people, which is indicated by their deployment of resources, and the tendency for the less well-endowed islands that surrounded Fiji to be drawn increasingly into the orbit of eastern Fiji in the eighteenth and nineteenth centuries as seafaring capacity became even more important within and between archipelagos.

Within Oceanic ontology, sea transport was always central. Prior to modern aviation and electronic communications it was unquestionably 'the' connection, the interface, the facilitator between people and gods, people and environment, and of culture to culture. Sea-going vessels were the pinnacle of societal achievement. They were the ultimate line of defense. Their design and functionality was radically different from that produced from any continental paradigm, almost Zen-like in its approach to finding ultimate form in simplicity and from a minimal resource base. Terrestrial design and construction was not the primary role of craftsmen but what naval architects and shipwrights did in their downtime. Their vessels were the products of cultures where metals were not an available option, where swimming and walking were equally important, where survival at sea, more so than on land, was primary. And they were tested and refined through a process of attrition and natural selection. For every successful landfall and subsequent 'story' and culture that survived, it is unknown how many countless perished beneath the waves and have been left untold.<sup>4</sup> The *drua* of central Oceania were arguably the greatest of the Pacific double-hulled vessels and arguably the finest blue-water sailing ships of their age.

## **Waqa Tabu: the height of Pacific Islander seafaring achievement?**

The fleets of great Lauan built *drua* or *waqa tabu* found throughout central Oceania were the most technologically advanced of the Oceania blue-water ships, some over 100 feet long, carrying complements of more than 200, capable of speeds of around fifteen knots and of sailing within four points of the wind. John Twynning of the whaling brig *Minerva*, which was wrecked in Fiji in 1829, describes the process of building a large ship at Lakeba in the Lau Islands, where he and others were given refuge. He concluded that the design and the building of the ship would have received 'the admiration of even the most skilful and scientific naval architect in Europe'.<sup>5</sup>

There were only two Fiji-specific sources out of more than 650 articles listed in Goetzfridt's 1992 review of references to Pacific navigation and voyaging, although several

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4. F. Helu, *Critical Essays: Cultural Perspectives from the South Pacific* (Canberra, 1999), 114.

5. J. Twynning, *Shipwreck and Adventures of John P. Twynning among the South Sea Islanders* (London, 1850), quoted in A. D. Couper, *Sailors and Traders: A Maritime History of the Pacific Peoples* (Honolulu, 2009), 28.

sources included reference to Fijian-related matters. By comparison, Goetzfridt lists 114 sources for the General Pacific, 363 for Polynesia, 160 for Micronesia and 20 for Melanesia.<sup>6</sup> To these were added additional written sources, some pre-1992 but not included in Goetzfridt's review, and others that have been published since. There is an extensive, well-reviewed but again scattered pictorial record. It is important to note that with the exception of a tiny minority of sources, all comment on *drua* culture has been recorded through a Western lens. Even the indigenous records in the autobiography of Bulu (1876) and the 1915 paper by Toganivalu are translations: the first by Fison and the latter by Beauclerc.<sup>7</sup>

There are a limited number of primary sources, but these are remarkably consistency with regard to vessel form, construction and functionality—what Tippet describes as morphological study.<sup>8</sup> Such commentaries are largely records of professional seamen,<sup>9</sup> or missionaries.<sup>10</sup> Then there is a body of work post the era of the 'great' *drua* (*waga tabu*, *musu waga*, *tabetebete*), but within the period when *drua* culture was still being practiced.<sup>11</sup> These must be considered a mixture of primary and secondary sources, with most of the commentators being professional academics. Finally, there is the body of work from the past four decades, coinciding with the current 'renaissance' in Oceanic sailing/voyaging, beginning with Lewis and the early work of Finney.<sup>12</sup>

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6. N. J. Goetzfridt, *Indigenous Navigation and Voyaging in the Pacific: A Reference Guide* (Westport, Conn., 1992). The artificial and externally imposed demarcation of Oceania into these categories is particularly distracting when examining Fijian records.
  7. J. Bulu, *Joel Bulu: The Autobiography of a Native Minister in the South Seas*. Translated by a Missionary (London, 1871); D. Toganivalu, 'Canoe Building', *Transactions of the Fijian Society for the Year 1915*, (1915), 9–15.
  8. A. Tippet, *Fijian Material Culture: A Study of Cultural Context, Function and Change* (Honolulu, 1968), 81.
  9. For example, Anderson, Cook and Samwell in J. C. Beaglehole (ed.) *The Journals of Captain James Cook on his Voyages of Discovery*, 4 vols (Cambridge, 1955, 1961, 1967, 1967); J. E. Erskine, *Journal of a Cruise among the Islands of the Western Pacific* (London, 1967, reprint [1853]); John Jackson, 'Narrative by John Jackson of his Residence in the Feejees', in Erskine, *Journal*, 411–77 (John Jackson is most probably a pseudonym for William Diaper, 1820–1891); C. Legge, 'William Diaper: A Biographical Sketch', *The Journal of Pacific History*, I (1966), 79–90; W. Mariner and J. Martin, *An Account of the Natives of the Tonga Islands in the South Pacific Ocean* (Edinburgh, 1827); C. Wilkes, *Narrative of the United States Exploring Expedition, During the Years 1838, 1839, 1840, 1841, and 1842, Vol. III* (Philadelphia, 1845).
  10. For instance, Bulu, *Joel Bulu*; W. Lawry, *Friendly and Feejee Islands: A Missionary Visit to Various Stations in the South Seas in the year MDCCCXLVII* (London, 1850); Thomas T. Williams, *Fiji and the Fijians and Missionary Labours among the Cannibals*, 3rd Edition (London, 1870).
  11. For instance, James Hornell, *The Canoes of Polynesia, Fiji, and Micronesia* (Honolulu, 1975); A. Krämer, *The Samoa Islands: An Outline of a Monograph with Particular Consideration of German Samoa* (Auckland, 1994), 283; L. Thompson, *Southern Lau, Fiji: An Ethnography* (Honolulu, 1940); Tippet, *Fijian Material Culture*; Toganivalu, 'Canoe Building'.
  12. For instance, S. Banack and P. Cox, 'Ethnobotany of Ocean-Going Canoes in Lau, Fiji,' *Economic Botany*, XLI no. 2, (1987), 148–62; F. Clunie, '*Ndrua* and *Kalia*: The Great

In addition to the glowing praise of Cook and his colleagues for Tongan *kalia* and *tongiaki*, nineteenth-century European observer Alden described *drua* as ‘a product of barbarian genius’, the ‘fastest sailing boat in existence’ and ‘capable of sailing nearer the wind than any European vessel’.<sup>13</sup> Fergus Clunie, a contemporary Fijian cultural expert, contends that ‘[t]he massive *drua* or *kalia* made last century in Fiji is justly celebrated as the most remarkable voyaging canoe ever to ply the Pacific.’<sup>14</sup> Maritime ethnographer Hornell describes the *drua* as ‘the largest and finest sea-going vessel ever designed and built by the natives of Oceania before contact with Europeans’.<sup>15</sup> The late Pacific maritime specialist and yachtsman David Lewis described both *drua* and *camakau* vessels as ‘the pinnacle of Oceanic canoe technology’.<sup>16</sup> His contemporary and fellow voyaging expert Ben Finney states that ‘the *kalia* has been lavishly praised as a stunningly fast shunting hybrid made by joining the double ended hull form and pivoting Oceanic lateen sail rig of Micronesian flying proas to a pair of hulls’.<sup>17</sup>

*Drua* achieved great size, were fast, could perform to windward, had great load-carrying ability, and were built in large numbers. Their hulls were fashioned from a timber described as the ‘titanium’ of Pacific boat building timbers—*vesi loa* (*Intsia bijuga*), a toredo worm resistant greenheart, which comes only from the limestone belt of islands in the southern Lau group, and is still considered superior to all other timbers.<sup>18</sup> The vessels’ home range included at least Fiji, Tonga, Samoa, Uvea and Futuna. They easily outperformed the equivalent European ships they met and there is evidence that they were the preferred vessels of Fijians, even into the early twentieth century.<sup>19</sup> They displayed greater windward ability than any other double-hull Oceanic design, notably the *tongiaki*, which they quickly displaced in Tonga. They were highly prized, arguably the highest prized asset. The skill displayed in design, construction and operation awed European recorders, some of whom were skilled naval architects. The following extracts confirm these assertions and are only a sample of the available evidence:

The next day we proceeded towards our destination, calling at the island of Ovalau ... even Tongan and Wallis’s Island canoes had come from Lakeba and other places to the long

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- Tongan Voyaging Canoe’, *Islands* (Jan–Mar 1987), 11; A. D. Couper, *Sailors and Traders: A Maritime History of the Pacific Peoples* (Honolulu, 2009); P. D’Arcy, *The People of the Sea: Environment, Identity and History in Oceania* (Honolulu, 2006); K. R. Howe (ed.), *Vaka Moana: Voyages of the Ancestors* (Auckland, 2006); B. Finney, ‘Ocean Sailing Canoes’, in Howe, *Vaka Moana*, 100–53; P. Hage and F. Harary, *Island Networks: Communication, Kinship and Classification Structures in Oceania* (Cambridge, 1996); G. Irwin, ‘Voyaging and Settlement’, in Howe, *Vaka Moana*, 54–91; R. Neich, ‘Pacific Voyaging After the Exploration Period’, in Howe, *Vaka Moana*, 198–245.
13. W. L. Alden, ‘The Flying Proa’, *Harper New Monthly Magazine*, V, 325 (1877), 428–33.
  14. Clunie, ‘*Ndrua* and *Kalia*’, 11–16.
  15. Hornell, *Canoes of Polynesia*, 319.
  16. D. Lewis, ‘The Great Canoes of the Pacific,’ *Hemisphere*, XXV no. 2 (1980), 66–76.
  17. Finney, ‘Ocean Sailing Canoes’, in Howe, *Vaka Moana*, 152.
  18. S. Banack and P. Cox, ‘Ethnobotany of Ocean-Going Canoes in Lau, Fiji,’ *Economic Botany*, XLI, 2 (1987), 148–162, 161.
  19. Thompson, *Southern Lau*; Toganivalu, ‘Canoe Building’; Tippet, *Fijian Material Culture*.

anticipated banquet at Bau, on the occasion of the arrival of this new canoe which had been building seven years, and was at least one hundred feet long, and sufficiently large to carry three hundred men.<sup>20</sup>

The following are the dimensions of the largest canoe I know ... Extreme length, 118 feet; length of deck, 50 feet; width of deck, 24 feet; length of mast, 68 feet; length of yards, 90 feet.<sup>21</sup>

These [forty-nine] canoes [seen in Tongatapu] are from one hundred to one hundred and forty feet long, and carry two hundred to four hundred people each; they are double, with a deck and house or houses, and with one enormous sail, scud along at twenty miles an hour. These canoes are wonderful pieces of naval architecture; they are made of different pieces and jointed together in a most curious fashion, with so close a joint as to be hardly perceptible, and not a nail being used in any part; they are sewn with signot, made from the cocoanut, on the inside, the outside presenting a smooth and polished surface.<sup>22</sup>

In one of the lofty canoe-sheds on the beach [at Lifuka] we inspected the king's great double canoe, as those of the largest class are called by the Europeans ... The canoe in question was upwards of a hundred feet in length, and like all of those dimensions, had been built in the Feejees, these islands affording no timber fit for the purpose. It is a proof of no little courage and dexterity that these apparently fragile and unwieldy vessels must be navigated in the face of the usual trade-wind between two and three hundred miles.<sup>23</sup>

*Drua* were fast. Basil Thomson, ethnographer of Fiji, gives the speed of the *drua* as 'from 10 to 15 knots with the wind on the quarter', while Hornell notes that '*drua* with a wind on the quarter could attain under favourable conditions a speed of about 12 miles an hour' and quotes the missionary Thomas West who describes undertaking a 38nm trip on a *drua* in three hours and also noted that 'they are highly adapted for sailing close upon a wind . . . within even three points of the wind'.<sup>24</sup>

Others contend that while capable of achieving such windward performance they did not in practice:

Although it could lie remarkably close to the wind – within about three points of the wind as opposed to about six points for the English square-rigger of the day – the *kalia* through its shallow draft was driven down wind and could not head into heavy sea, which forced the hulls asunder. An expert crew could beat home to Tonga under even quite fresh conditions, but some idea of the difficulty can be gained from the seventy-seven tacks Tu'ihalafatai is recorded as making on his last voyage from Fiji in the teeth of the Southeast Trades.<sup>25</sup>

The missionary Williams, who travelled extensively by *drua*, found that a 'canoe in good condition makes very little water, and such as have just been described would safely

20. Jackson, in Erskine, *Journal*, 453.

21. Williams, *Fiji and the Fijians*, 63.

22. 'Trip to the South Sea Islands', *Otago Daily Times*, 15 March 1864 (issue 699), 6.

23. Erskine, *Journal of a Cruise*, 132.

24. B. Thomson, *The Fijians: A Study of the Decay of Custom* (London, 1908), 292; J. Hornell, *Canoes of Oceania*, 327.

25. Clunie, 'Ndrua and Kalia', 15.

convey 100 persons and several tons of goods over 1,000 miles of ocean'.<sup>26</sup> Lawry witnessed, on 10 October 1847, 'the fleet of Thakombau sailed out this morning with not less than 200 warriors on board each canoe'.<sup>27</sup> Coppinger describes a *drua* he saw in Bau in 1880, as '72 feet long, with a depth of hold about 5 feet; it was intended to carry 250 men [and] he entertained no doubt about the correctness of this number'.<sup>28</sup>



in a double canoe of about 100 feet in length:

the beam would be 6 to 8 feet [and]... a man could easily walk in the hold without touching the deck. A pig could be roasted whole in the open cooking place and the food and water were easily stowed away for long voyages. On one occasion a canoe carried 12 head of cattle in her holds from Natewa Bay in Vanua Levu to Levuka, a trip of 120 miles, and another carried on deck from Tailevu to Suva a cargo of bagged maize sufficient to load the *Alarm* ketch of 30 tons and the *Xerifa* of 20 tons burden.<sup>29</sup>

*Drua* were comparable in size, and superior in speed and windward capability, to equivalent European designs of the contact period. They were blue-water, long-range capable and superior to any other vessel seen by early European explorers, of a comparable length to the *Endeavour*, with a larger complement, three times faster and capable of sailing three points closer to the wind. It is worth noting that even the earlier *tongiaki* (Tongan) vessel classes seen by the Dutch in the seventeenth century were considered by them to sail 'so swiftly that there are few ships in Holland that would outdo them'.<sup>30</sup> The *drua* by comparison was in a class above. And this was all the more remarkable in that it was achieved without recourse to metals (and arguably because of a lack of metals). The comparison is not a fair one. European deep-draught displacement monohulls were built to a totally different design paradigm that required vessels to carry extreme loads and keep the sea for months at a time. The *Endeavour* was a converted collier, chosen for her durability, not her speed.

*Drua* were multifunctional vessels. Primarily the naval attack weapon of choice, they saw service as blockade-runners and enforcers, landing craft, fleet battleships, troop and supply transporters and deadly effective rammers. There are graphic descriptions of the naval battles fought.<sup>31</sup> In times of peace they performed as diplomatic missions and passenger/cargo traders. They were used extensively in the service of the new Christian religion as essential transport for both European and local missionaries, especially by the Tongan teachers who used massive *kalia* on regular conversion voyages from Tonga to Fiji via the Lau. The already cited missionaries Lawry, Thomas, and Williams reported regularly travelling by *drua*, often in extremely rough weather and sea conditions.

26. Williams, *Fiji and the Fijians*, 76.

27. Lawry, *Friendly and Feejee Islands*, 144.

28. R. W. Coppinger, *The Cruise of the Alert: Four Years in Patagonian, Polynesian, and Mascarene Waters (1878–82)* (London, 1883), 163.

29. Colman Wall, 1916, quoted in Hornell, *Canoes of Polynesia*, 326.

30. Hornell, *Canoes of Polynesia*, 266, citing W. C. Schouten, *Journal of the Wonderful Voyage made by W. Cornelius Schouten of Hoorn (1615–17)*, (Hoorn, 1648).

31. F. Clunie, *Fijian Weapons and Warfare* (Suva, 2003), 34–6.

## Origins and interactions of the *drua* culture: towards an indigenous maritime history

While there is widespread agreement among commentators on many issues pertaining to *drua*, there is also marked divergence on critical points. Two main schools of thought exist. The first proposes evolution of a Fijian or Melanesian technology and design origin route after exposure to Micronesian rigs and hull configurations. The hypothesis is that the resultant vessel class was subsequently adopted and finished by Tongan and Samoan craftsmen after it had travelled east to the Lau Group, who in turn came to dominate the resultant *drua* building industry, particularly in the Lau.

The alternative view is that the evolutionary design breakthrough was performed by Samoan craftsmen under Tongan instruction, and entailed blending Micronesian rigs with adapted Tongan hulls, with the introduction of iron as a possible catalytic factor. In the latter theory, Fijian sailing and ship design/construction capacity is held to be minimal until the recent period of Tongan influence. Fiji gained the *drua* by default as a result of a geographical accident. The primary resource extraction site for construction of this new technology was the southern Lau due to the limestone derived *vesi loa* from which these craft were built. While neither theory can be conclusively proved on available evidence, this review finds that there is reason to doubt some of the reasoning offered for the latter theory.

There is agreement amongst commentators that the sail and rig of the *drua* class are Micronesian in origin,<sup>32</sup> although it is not known if this was a result of the technology being brought to Fiji by Fijians, Micronesians or some other intermediary, or whether Tongans obtained it from Micronesia. There is divergence on where the distinctive *drua* hull form comes from. There are a number of theories. Finney, for instance, considers that they are hulls adapted in Tonga from Micronesian models.

Apparently, the Tongans had been in contact with sailors from Micronesia, where a breakthrough in canoe design had occurred. The sailors had developed a double-ended craft with a moveable sail that allowed them to sail more efficiently to windward. Tongans adapted this moveable-sail/double-ended configuration, coming up with the *kalia*, a racehorse of a double canoe.<sup>33</sup>

In this, he has the support of D'Arcy, who notes '*Drua* were only developed in Fiji in the late 18<sup>th</sup> century. Although made in Fiji their appearance owed much to skills and ideas developed elsewhere'.<sup>34</sup>

Clunie is more adamant. 'Given long cherished, myths regarding 'Fijian' origins for *Camakau* outriggers and *Drua*, it must be emphasised that while made of Vitian timber, their design and handling and hulls came from Tonga and Uvea ... and their builders from Tonga and Samoa'.<sup>35</sup> In his 1987 article he argues

32. Although, as previously stated, this has not been proven beyond reasonable doubt.

33. B. Finney, *Voyage of Rediscovery: A Cultural Odyssey through Polynesia* (Berkeley, 1994), 234.

34. D'Arcy, *People of the Sea*, 141.

35. F. Clunie, *Yalo i Viti. Shades of Viti: A Fiji Museum Catalogue* (Suva, 1986), 15.



voyaging canoes clearly ancestral to the *kalia* once abounded in Tonga. As early as 1616, the Dutch vessel *Eendracht* encountered many *tongiaki*<sup>36</sup> double canoes including one standing far to the north, bound for Samoa ... the hulls of the *drua* originate in the hulls of the earlier *tongiaki* and that the distinctive opposing ends, one a vertical cutwater, the other an ovulated truncate is further proof of the design originating from Samoan Lemaki craftsmen'.<sup>37</sup>

Reid's comments on the meaning of the derivative Fijian word *karia* can be read either way in support of this claim.

The *drua* in Tonga acquired the name *kalia* which would appear to be derived from the Fijian *karia*. This word described the certain shape of canoe end, no doubt contrasting in Tongan eyes with the fixed bows of the *tongiaki*, the original double canoe of the Tongans.<sup>38</sup>

In contrast, Hornell argues it

is probable that each of these two classes of double canoe had an independent origin, the Fijian type from an outrigger ancestor, the Polynesian from the connection of two equal or twin hulls after the fashion which persisted to the last in designs of the double canoes of the Hawaii and the Society Islands.

Hornell considers that the *tongiaki* could not have been the originator and argues that there

is little doubt that the modern Fijian double canoe is a hybrid between this old [New Caledonian] type and the large sailing outrigger of Micronesia. The design may be described as a compromise in which the sailing advantages of the single outrigger canoe have been adapted to and combined with the cargo-carrying capacity of the double canoe.<sup>39</sup>

The Tongan route has also been disputed on linguistic evidence.

Pacific Islanders experienced and innovated, and quickly assimilated innovations they perceived as being to their advantage. This is particularly clear in the area of canoe construction. Accounts of early explorers tell us, and linguistics confirms that the Tongans and Samoans borrowed the double canoe and I have argued here that the shunting technology followed the same route.<sup>40</sup>

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36. The *tongiaki* with two true hulls of equal length and a more primitive tacking rig were durable if somewhat clumsy and with no windward performance. They did sterling service back to at least the early seventeenth century and potentially for at least centuries, if not millennia, prior to this.

37. Clunie, 'Ndrua and Kalia' 11.

38. C. Reid, *Tovata I & II* (Suva, 1990), 21.

39. Hornell, *Canoes of Polynesia*, 334.

40. P. Geraghty, 'Linguistics and Central Pacific Sailing Technology,' in R. J. Morrison, J. P. P. Geraghty and Linda Crowl (eds.), *Science of Pacific Island Peoples, 1. Ocean and Coastal Studies* (Suva, 1994), 64.

Reid offers an explanation for a west to east transfer of *drua* design.

It was during the reign of Ginigini also that Lakeban traditions place the arrival on the island of the Levuka people, first indication of those stirrings in the west that were to have such consequence in Fiji's history. A seafaring folk, they had been the original inhabitants of Korolevu, the small isle off the south east coast of Viti Levu which the Bauan chiefs took over as their base. The date of this occupation has been suggested as 1760, and the removal of the former incumbents may therefore be regarded as mid-eighteenth century event. The account of their exodus and migration from island to island until they reached Lakeba has been told in many ways.<sup>41</sup>

If these Levukans, also referred to by Williams and Wilkes, arrived on *drua*, then it is possible these would have been the vessels seen by visiting Tongans on inferior *tongiaki* class vessels.<sup>42</sup>

Reid concurs with Clunie with regard to the Lemaki chronology and influence, but describes the transition thus:

[t]he first permanent settlers from the east [Tongans settling in the Lau] appear to have been shipwrights. Tongans had recognised the double-hulled *drua* as superior to their own sea-going craft in speed and handling, and even more important, they had seen the hardwood resources of the Lau limestone belt which were incomparably superior to the timber available in Tonga.<sup>43</sup>

This explanation is consistent with Williams, who notes that:

The well-built and excellently designed canoes of the Fijians were for a long time superior to those of any other islanders in the Pacific. Their neighbours, the Friendly Islanders, are more finished carpenters and bolder sailors, and used to build large canoes, but not equal to those of Fiji. Though considering the Fijians as their inferiors, yet the Tongans have adopted their canoes, and imitate them even in the make of their sails.<sup>44</sup>

Thomson also supports this idea.

And now we come to a remarkable paradox. The Tongans were the great navigators of the Pacific; the Fijians are not known to have voyaged beyond their own group. The Tongans were so expert with adzes that they rapidly displaced the Fijian canoe-builder in his own country. And yet the Tongan counterpart to the *ndrua* was the *tongiaki*, a craft so clumsy and ill-finished that it did not survive the eighteenth century, when the Tongans learned the art of canoe sailing from Fijians.<sup>45</sup>

All commentators refer to the *drua* as a recent (mid to late eighteenth century) design evolution. Although there is universal consensus in the literature on this point, it is not

41. Reid, *Tovata I & II*, 8.

42. Williams, *Fiji and the Fijians*; Wilkes, *Narrative*.

43. Reid, *Tovata I & II*, 12.

44. Williams, *Fiji and the Fijians*, 76.

45. Thomson, *The Fijians*, 293.

necessarily conclusively proved. *Drua* are increasingly reported from the Viti Levu seaboard to the extremities of the recorded eighteenth-century Tongan sphere of influence from at least the 1770s, the time of Cook, onward.<sup>46</sup> But, if the hull innovations had a Melanesian, rather than a Tongan, origin, as Haddon and others suggest, and/or the *drua* existed in Fiji prior to eastward expansion from Bau to an already populated Lau (Reid suggests this was c.1750), it could be reasonable to assume the ‘Levukans’ travelled to Lau in *drua* to get there.<sup>47</sup> If this is held to be true then the subsequent transfer of technology to Tonga is easily explained and agreed. It would leave unanswered the questions of whether the *drua* originated in Bau or west of there; how long the *drua* was known west of Bau; and whether the original *drua* was only built shortly before the ‘Levukan’ expansion or at some undetermined point between the original Fijian settlement and 1750.

If *drua* were not a Tongan invention, and had migrated eastward in the mid-eighteenth century from west of Bau, then the technological innovation is almost certainly pre-European contact and indigenous in origin. It is only possible to speculate what effect a further expansion of *drua* culture might have meant to the wider region if its migration further into Oceania had not been impeded by European arrival. Given the speed at which the previously dominant *tongiaki* class was replaced by *drua* (presumably no *tongiaki* were commissioned post-*drua* knowledge being introduced to Tonga, although existing *tongiaki* hulls were almost certainly retro-fitted with *drua* rig), it is arguable that *drua* could have effected a revolution in canoe technology elsewhere in Oceania with similar speed of uptake as witnessed in Tonga, which saw near total displacement of the earlier designs within a generation.<sup>48</sup>

There is no record of the Fijian predecessor to the *drua*. It is highly improbable that the ancestors of the Fijians arrived in Fiji 3,000 or more years ago aboard *drua*. Irwin considers the traditional three-spar-rig appeared in Fiji and West Polynesia long after initial settlement.<sup>49</sup> It follows that they came in another class of vessel. There is no available evidence as to this craft and the nature of its contribution, if any, to the design of the later *drua*, although Hornell holds the primitive New Caledonia hull to be the *drua*’s closest relative.<sup>50</sup> Nor is there available evidence for any design or technology transition of Fijian nautical craft from the time of first settlement and the arrival of the *drua*.

Clunie, who strongly favors a Tongan designer for the *drua*, describes the Fijians, prior to them being educated in *drua* culture by the Tongans, as a ‘rather lubberly people’, implying that their pre-*drua* maritime capacity was limited.<sup>51</sup> Against this must be argued the extent of the Fiji islands group (~400 islands covering six degrees of latitude and five of longitude with numerous blue-water passages between islands), the oral record of inter-island contact within this group prior to this period and the speed at which

46. All historical commentators refer to Cook arriving *during* a period of transition, not at or immediately prior to its commencement.

47. Williams, *Fiji and the Fijians*; Reid, *Tovata I & II*.

48. P. Dale, *The Tonga Book* (London, 1996), W. Lawry, *A Second Missionary Visit to the Friendly and Feejee Islands in the year MDCCCL* (London, 1851); Wilkes, *Narrative*.

49. Irwin, ‘Voyaging and Settlement,’ in Howe, *Vaka Moana*, 79.

50. Hornell, *Canoes of Polynesia*, 334.

51. Clunie, ‘Ndrua and Kalia’, 11.

Fijians adopted a *drua* culture. From the records of most commentators, Fijians were widespread owners and consummate handlers of their craft by the early to mid-nineteenth century.<sup>52</sup> This would be a startlingly short period of technology transfer and uptake for a culture that displayed minimal capacity prior to the 1770s.

Based on the oral evidence of inter-archipelago connections between the groups,<sup>53</sup> it appears reasonable to speculate that Fijians had at least access to, or knowledge of, Tongan *tongiaki* class vessels within their home waters, if not ownership and management. Whether they also had an indigenous design of the double-hulled canoe, presumably either descended from the Melanesian/New Caledonia design or a descendant of earlier Fijian double-hulled evolution, is unknown. Irwin considers 'the historic distribution of canoe types suggests the double-hulled canoe developed in Fiji and West Polynesia and there is linguistic support for this'.<sup>54</sup>

The sail and rig of the *drua* and *camakau*<sup>55</sup> are identical designs and originated from Micronesia.<sup>56</sup> The Oceanic lateen rig is unknown elsewhere in Polynesia. The literature is divided as to whether it was Fijian or Tongan or Micronesian-initiated contact that provided the sail and rig technology transfer. It is also not known whether the *camakau* led to the *drua* (or vice versa) or whether they evolved contemporaneously. The large *camakau* recorded in Fiji post-1800 were certainly blue-water capable. It is reasonable to assume that the outrigger and the double hull have a common geographical origin and technology transfer route.

Alternatives include a *camakau* origin with Fiji or Tongan-initiated contact, a *camakau* origin with Micronesia-initiated contact, a *drua/kalia* origin with Fiji or Tongan-initiated contact, a *drua* origin with Micronesia-initiated contact, and a contemporaneous evolution with three possible routes. Answering this conundrum is probably the key to determining whether the *drua* hulls were modified *tongiaki* or expanded outriggers of Micronesian or Fijian origin. The possibility that the transfer went the other way, to Micronesia from either Tonga or Fiji, is not considered by any commentator reviewed in this research, but is not totally implausible.

## Implications of the *drua* culture for regional, indigenous history

There was minimal variation in canoe design within the *drua* culture area. *Drua*, *Kalia*, *Alia* were, in respect of design and handling, largely identical. The vessel class is characterized by a Micronesian-designed Oceanic lateen sail and rig on two true hulls of unequal length sailed by 'shunting' end-for-end as opposed to 'tacking through the wind' with the smaller hull always to windward. Detail of design and construction is

52. See Dale, *Tonga Book*; Erskine, *Journal*; C. Wall, 'Native Navigation in the Pacific', *Transactions of the Fiji Society 1908-1910*, (1909), 1-7.

53. See L. Fison, *Tales from Old Fiji*. (London, 1907).

54. Irwin, 'Voyaging and Settlement,' in Howe, *Vaka Moana*, 76.

55. *Camakau* are the outrigger version of *drua*, also built to large size and blue-water capable.

56. F. Clunie, 'Ndrua and Kalia: The Great Tongan Voyaging Canoe', *Islands* (Jan-Mar 1987), 11-16, considers it most likely of Kiribati origin.

reasonably well characterized,<sup>57</sup> and the existence of preserved examples of *drua* and numerous museum models and artefacts leaves little doubt as to the reliability of this information. There are a number of first-hand reports of the methods of sailing and general operation and a strong pictorial record. There is near total, but not unanimous, consensus that the Tongan shipwright achieved a superior finish of vessels to the Fijian. In 1777, Cook and his officers declared Tongan canoe building to be the best craftsmanship they found in the Pacific.<sup>58</sup> Hornell details the Samoan hull construction method which is considered more complex than the methods employed in Fiji and quotes descriptions and figures by Kramer and Buck.<sup>59</sup>

Two separate classes of *drua* are documented, although this classification is not realized by all recorders. Small *drua* were constructed *saucoko* style; a single hollowed log forms the base of each hull with a single lashed strake used to raise the height of the hull. This is the construction style of the *Ratu Finau*, the 1913 fourteen-meter example preserved in the Fiji Museum, and is probably close to the size limit for this form. Much larger vessels, also known as *Waga Tabu* and *Musu Waga*, were built using the *tabetebete* design where the *takele* (keel) is formed from two or even three scarfed planks and then the hulls are built up using several planks per side. It is commonly reported that no *tabetebete drua* has been built since the end of the nineteenth century.<sup>60</sup> There have been a number of *saucoko drua* built over the past century, although none are believed to be operational today.

This minimal variation in design is testimony to its efficacy, the practical adaptability of Pacific seafarers, and the connections between communities within the *drua* culture. *Drua* seem to have led to an increase in the size of inter-island expeditions. Fleet sizes could be large. A fleet of canoes and the warriors transported by it were known as *bola*, the Fijian term for 100 canoes,<sup>61</sup> with European observers noting ‘Fijian canoe fleets numbering scores and often a hundred or more vessels. An allied fleet which ran down William Lockerby in Wailea Bay in 1808 was composed of some 150 canoes’.<sup>62</sup> A Bauan fleet in the Bau-Rewa wars of the mid-century consisted of about 200, ‘counting together the double canoes, those with outriggers and sailing canoes . . . when they sailed away, Laucala Bay was absolutely crowded with canoes’.<sup>63</sup> The Bauan canoe fleet that took Charlie Savage, Paddy Connell and other beachcombers on a raid in 1809 was hardly less impressive, comprising 64 *drua* or double canoes, 36 large *camakau* outrigger sailing canoes, 26 *tabilai* fighting canoes; and 10 small *takia* sailing canoes; in all 136 canoes transporting some 2,700 men’.<sup>64</sup> And from a report made in 1847:

The spot over which we are now sailing (en route from Ngainge (sic) past the island of Malagai (sic) to Bua) is one which Varani will not soon forget. He was here, a short time since, in his

57. Hornell, *Canoes of Polynesia*; Thompson, *Southern Lau*; Toganivalu, ‘Canoe Building,’ 9–15; Williams, *Fiji and the Fijians*.

58. Beaglehole, *Journals of Captain James Cook*.

59. Hornell, *Canoes of Polynesia*; Krämer, *Samoa Islands*.

60. For example, Thompson, *Southern Lau*.

61. Clunie, *Fijian Weapons*, 34.

62. E. Imthurn and L. C. Wharton (eds.), *The Journal of William Lockerby* (London, 1925), 39.

63. Toganivalu, ‘Canoe Building,’ 9–15.

64. Clunie, *Fijian Weapons*, 35.

terrible character of warrior and cannibal: and in one canoe he met and encountered a fleet of sixty canoes, one of which had a small cannon on board.<sup>65</sup>

Upward of 50 sail, coming from as far away as Tonga and Uvea, were counted in Bau waters for the commissioning of the *Ra Marama* in 1849 by Jackson, who had earlier sailed in a similar sized fleet.

In a few days we accordingly started, a great fleet of canoes consisting of about forty, and the number of natives about two thousand ... and then we were mostly obliged to sleep in the canoes, jammed up in such a manner to be actually lying in two and three layers on top of each other.<sup>66</sup>

Large fleets of *kalia* were recorded in Tonga. Wall recounts an 1855 fleet of thirty canoes from Tonga that sailed to attack parts of Fiji and returned safely.<sup>67</sup> An unnamed correspondent visiting Tongatapu recorded: 'a small speck in the horizon indicated a canoe, and soon another, and another followed ... These 49 canoes came bounding along with their living freight like racehorses'.<sup>68</sup>

Mariner was a castaway in Tonga from 1806 to 1810 and repeatedly recorded large fleet sizes from this period. 'The large canoes of Lefooga [Lifuka], about fourteen in number, were then launched, which with Toobo Nuha's fleet from Vavaoo [Vava'u], made together about fifty sail'.<sup>69</sup>

All things being in readiness, the following morning the king embarked with the whole of his forces, about 5000 men, besides 1000 women, in fifty large canoes, containing also the four carronades, ammunition, and everything necessary for a vigorous attack upon the strong fortress of Vavaoo.<sup>70</sup>

Tippet describes the autobiographies of early Fijian missionaries Jemesa Havea and Joeli Bulu as being, to a large extent, nautical narratives. Bulu graphically describes sailing from Tonga to Moce in two days, sailing *drua* from Viti Levu to Kadavu in atrocious conditions and even surviving a hurricane in the Lomaiviti group. His accounts describe his missionaries, Tongan teachers and converts all scudding at will and often at a moment's notice around the Lau, eastern Viti Levu and Kadavu, spreading the gospel on a variety of large and small *camakau* and *drua*.<sup>71</sup>

The majority of the vessels described above were constructed in the southern Lau.

65. Lawry, *Friendly and Feejee Islands*, 80.

66. Erskine, *Journal*, 423.

67. Wall, 'Native Navigation in the Pacific', 1–7, cited in Goetzfridt, *Indigenous Navigation and Voyaging*, 51.

68. 'Trip to the South Sea Islands', *Otago Daily Times*, 15 March 1864 (Issue 699), 6.

69. W. Mariner and J. Martin, *An Account of the Natives of the Tonga Islands in the South Pacific Ocean* (Edinburgh, 1827), 91.

70. Mariner and Martin, *Account of the Natives*, 159.

71. Tippet, *Fijian Material Culture*, 83; Bulu, *Joel Bulu*.

The Fiji islanders make their canoes principally of a hard firm wood, called *fēhi*, which is not liable to become worm-eaten; and as the Tonga Islands do not produce this wood, the natives are not able to build canoes so large or so strong as those of their instructors. All their large canoes, therefore, are either purchased or taken by force from the natives of Fiji.<sup>72</sup>

The translocation of *mataitoga* craftsmen from Tonga and descendants of Lemaki, a Samoan plank-building specialist, to the Lau in temporary and permanent settlements is well recorded by, amongst others, Thompson, Tippet and Reid. The unique mixed cultural legacy of this translocation is clearly evident today.<sup>73</sup>

Oceanic sea-transport technology in the Fiji/Tonga/Samoa region was in a progressive (and aggressive) expansion phase at the time of European contact. This is the opposite of what is reported for much of the rest of Oceania's inter-archipelago contact, in which double-hulled voyaging was in decline at this time. It is uncertain to what extent this progressive phase may have preceded sustained European contact.

This wider development of the *kalia*, *ʻalia* and *ndrua* type of canoe in the later decades of the 1700s was instrumental in changing the balance of power in the Tonga, Samoa and Fiji area. With their superior sail rigs and mostly manned by Tongans, these canoes could beat into the wind, allowing closer trade and political relations between Tonga, Samoa and Fiji.<sup>74</sup>

## Indigenous Fijian and Imperial history reconsidered

This review of information pertaining to what we suggest was a vibrant and widespread *drua* culture infers that the European impact and influence on this culture and its magnificent *drua* was much less than is generally contended, and that scholars have generally underestimated Fijian maritime culture. Clunie argues that the earliest introduction of metal into Tonga by European sailors was potentially a catalytic factor in the evolution of the *drua* class: 'the introduction of iron and steel tools stimulated the development of the canoe by encouraging the use of *vesi* and the production of much larger vessels. In Cook's time, a spectacular *tongiaki* was some 70 feet long and bore perhaps 80 men. By the 1820s when Lemaki's grandson Maopo built the *Draunivia* for Tanoa of Bau, canoes had grown markedly in size and—despite the proportionally smaller deck of the *kalia*—in carrying capacity, the *Draunivia* being 105 feet long and transporting several hundred passengers'.<sup>75</sup>

It is possible, of course, that the 70-foot long *tongiaki* was only the biggest Cook saw and not the biggest there was. If Clunie is correct (and the *drua* was not therefore a purely indigenous design) then it would greatly strengthen the case that this was a Tongan design. Against this is the continued use of largely unchanged *tongiaki* for at least 150 years (and potentially millennia) prior to the *kalia* revolution. If the *kalia* was a product,

72. Mariner and Martin, *Account of the Natives*, 359.

73. Thompson, *Southern Lau*; Tippet, *Fijian Material Culture*; Reid, *Tovata I & II*.

74. On the general decline across Oceania see Howe, *Vaka Moana*, 143–5. For Western Polynesia, see R. Neich, 'Pacific Voyaging after the Exploration Period', in Howe, *Vaka Moana*, 234.

75. Clunie, 'Ndrua and Kalia', 16.

to some degree, of the influence of iron technology it would make it, arguably, the earliest industrial cultural hybrid application in Oceania post contact. In any cultural context, applying newly acquired technology to upgrading naval capacity is the highest priority of a maritime-focused decision-maker.

Finney is amongst a number of commentators who notes that 'at the time of European contact the Tongans were adopting a double-ended hull design and movable lateen-like sail pioneered by Micronesian sailors, which provided superior performance to their traditional canoe'; moreover, 'when Cook visited Tonga in 1774 on his second voyage into the Pacific, a new type of double canoe called the *kalia* was gaining popularity as the favoured voyaging craft'.<sup>76</sup> If this is correct, then the iron 'catalyst' must have arrived pre-Cook as the first *kalia* were by then already in production.

If iron was in use at this time it presumably came from contact with the earlier Dutch explorers, Schouten and Le Marie in 1616, or Tasman in 1643. But Cook makes no reference to Tongans using iron prior to his arrival, and King did not record metal tools in the Tongan carpenters' toolbox, as we discuss below. Williams claims that the

first iron goods [in Fiji] were introduced among the Somosomoans. The first article of steel owned by them seems to have been the half of a ship-carpenter's draw-knife, ground to an edge at the broken end. This was fixed as an adze, and greatly prized, receiving the name of *Fulifuli* after the chief who brought it to Fiji. One of their first hatchets came through the Tongans, and was named *Sitia*.<sup>77</sup>

Finney discussed the extensiveness of Tongan voyaging, including their established contact with Fiji and Melanesia, yet infers no role for non-Polynesians in canoe design or evolution from outside of Tonga. Cook's comment on the outstanding capacity of Tongan canoe builders in his earliest contact (see above) suggests that this level of craftsmanship was achieved without the influence of iron, and was of a standard that could produce a *drua* without iron. In King's journal from Cook's voyage, he describes the *tongiaki* hulls he witnessed as being built using only 'a stone hatchet, an Augur made of Sharks teeth & rasp made of rough fish skin'.<sup>78</sup> Anderson recorded in his Journal that 'each plank is fitted with such nicety that they would do credit to an expert European artist, the only joining to be seen on the outside being a line not more open than some in our common Cabinet work'.<sup>79</sup> There is no mention of the use of metal tools here. However, this was not necessarily a barrier to creating enhanced canoe technology. Participants at the 1996 'Waka Moana Symposium' in Auckland were treated to

a carving demonstration by acknowledged Maori master carvers Dante Bonica and Charles Koro Nehu using stone adzes. The speed and precision of the removal of the wood was comparable to that of a steel adze, given sufficient technique, and that was a revelation to most of the people there.<sup>80</sup>

76. Finney, *Voyage of Rediscovery*, 49.

77. Williams, *Fiji and the Fijians*, 83.

78. Beaglehole, *Journals of Captain James Cook* (1967), 1367.

79. Beaglehole, *Journals of Captain James Cook* (1967), 936.

80. H. D. Bader and P. McCurdy (eds.), *Proceedings of the Waka Moana Symposium* (Auckland, 1999), 70.



Shineberg (1971) and D'Arcy (2000) are amongst authorities on Oceanic history who have questioned the scale and extent of musket and iron technology in these islands, and found their historically vaunted capacity to change history as limited and overstated.<sup>81</sup> Technology was incorporated into existing indigenous patterns of use and value, which limited its ability to transform societies. A similar argument could also be explored for the assumed influence of iron on the scale and speed at which Oceanic craftsmen could construct naval hardware. It has also been suggested that the main reason for the end of *drua* cultural expansion was European influence and imperial power. The *Drua* evolution did not move east of West Polynesia. How far east it travelled is unproven, but Niue and Tokelau are probably the eastern-most points, with the northern Cooks an outside possibility. No scholars have seriously investigated Fijian–Maori links in the era of the *drua* culture, nor voyaging westward to Melanesia as was done by technologically inferior vessels from Tonga some 200 years earlier, as noted by Spanish expeditions in the Solomon Islands.

Two factors might explain why this vibrant, expansive and dynamic *drua* culture did not expand further. The first is that European imperial authority, and the devastating effects of introduced diseases, impacted the region to constrain the labor-intensive *drua* culture. Indeed, the eastern Pacific beyond the Cook Islands was already partly occupied by the French, and Māori Aotearoa followed soon afterwards. The other possible reason is that the Pacific concepts of power and prestige were not especially orientated towards territorial accumulation. Power involved legitimacy and prestige measured primarily by the adherence of loyal followers in a relationship couched in terms of reciprocity, while over-expansion geographically strained polities logistically and ran the risk of losing loyalty by over-extension and loss of coherence. *Drua* were central to chiefly prestige and both symbolized and helped ensure the loyalty of followers.

These two explanations are not mutually exclusive. The evidence suggests European rule did not end the *drua* culture for another two generations. The introduction of European ship designs and technology did not immediately displace local craft. *Tabetebete drua* remained the vessel of choice for Fijian chiefs until the end of the nineteenth century, while *saucoko* vessel construction remained a vital component of inter-island and interstate trade well into the twentieth century.

The increasing presence of Westerners did little to influence Fijian maritime technology. Fijians learnt to use oars from observing Europeans, but most inter-island traffic continued to be carried on *drua* and *camakau* . . . Although Cakobau ordered a schooner built overseas to enhance his *mana*, Fijians generally did not take to western vessels. Owning a schooner did not engender the same pride as the construction of a great *drua*.<sup>82</sup>

W. G. Foye, an English geologist who travelled through Lau in 1912, initially on a missionary cutter and then on local *camakau*, commented: 'The canoes [*camakau*] are much

81. D. Shineberg, 'Guns and Men in Melanesia', *Journal of Pacific History*, VI (1971), 61–82; D. Shineberg, 'The Sandalwood Trade in Melanesian Economics, 1841–65', *Journal of Pacific History*, I (1966), 129–46, and P. D'Arcy, 'Maori and Muskets from a Pan-Pacific Perspective', *New Zealand Journal of History*, XXIV, 1 (2000), 117–32.

82. P. D'Arcy, *People of the Sea*, 142.

swifter than the cutters, and natives often prefer to sail from island to island or even from Fiji to Tonga in their canoes rather than to depend on the slower passage of a cutter'.<sup>83</sup>

Thompson asserted that there was a revival in the building and use of traditional craft during the depression of the 1920s and 1930s, largely as a result of the crash of the copra market and a lack of any income for other means of transport.<sup>84</sup> Gillett et al. found that by the 1990s traditional craft were rarely deployed, with passages between Lau and Suva almost non-existent. Two important trips were well remembered. In 1953, a fleet of two *camakau* from Ogea and four from Fulaga sailed to Suva, through the Lau and Lomaiviti groups, for the arrival of Queen Elizabeth, while four Kabara canoes sailed to Suva for a Methodist conference in 1964.<sup>85</sup> Since then there have been only sporadic reports, including the *drua Tabu Soro* built on Ogea and Fulaga in the late 1980s, and the *drua* of Simione Paki which sailed from the Lau to Suva in 1992.

Written records suggest that European technology did little to alter the manufacture of *drua*. A more compelling reason for the failure of the *drua* culture to expand beyond its Central Pacific core was that they fulfilled their intended function without needing to do so. *Drua* were not designed around a primary objective of long-range exploratory voyages. They were naval and later merchant ships servicing established trade, kinship, secular and diplomatic routes. *Drua* were high value assets whose functionality extended far beyond their role as vessels of burden. *Drua* were arguably the most valuable and expensive asset a chief could possess. Construction could take up to seven years, during which a skilled workforce would be employed. Only a man of means could afford both the initial outlay and the continual maintenance a lashed vessel built of organic materials required. And they were more than just assets. A warship capable of marginally faster speeds or better maneuverability might be the difference between life and death, not only for the crew but also the community it protected. Vessel cost could be measured in the number of lives sacrificed in its construction and operation, which could run into scores. Toganivalu and Thompson in particular discuss the ritual and protocol associated with *drua* culture. They were 'sacred canoes' in all aspects of the term.<sup>86</sup>

Often an entire village or community were involved in the building process. Families took turns at feeding the Lemaki or Mataitoga. The woman assisted in plaiting the sails and making sennit, the youth were tasked with food gathering (fishing) while the menfolk were occupied in the canoe building and also assisted in making sennit while providing manual labor to the builders. So the building of a *Drua* had a uniting (*Duavata*) effect and brought the village together with one goal to finish the canoe and bring pride to the community. A smart chief would order the building of a *Drua* when he sensed disunity amongst his people. There would be ceremony and feasting when a canoe was commissioned and an immense sense of pride and unity, plus more feasting, when the canoe was completed. So at times when a community was divided (*Rua*), the building of a *Drua* would bring everyone together as one (*Duavata*).

83. W. G. Foye, 'Lau Islands of Fiji', *Geographical Review*, IV, 5 (1917), 384.

84. Thompson, *Southern Lau*, 176.

85. R. Gillett, J. Ianelli, T. Waqavakatonga and M. Qica, *Traditional Sailing Canoes in Lau* (Suva, 1993), 64.

86. Toganivalu, 'Canoe Building', 9–15; Thompson, *Southern Lau*.

Tippet's analysis is particularly important to our understanding of the role and function of *drua*. Going beyond morphological terms, he reminds us that *drua* were not simply conveyers of goods and gifts on which the whole kinship and allegiance-based networks of this region rested. Rather, they were often the artefact and object of exchange itself:

The process of building and launching the sacred canoe provides a focal point for the study of communal cooperation ... The canoe is an artefact of artefacts: (1) The resultant canoe is the symbol of group achievement; (2) The project reinforces group solidarity; (3) The building and eventual use of the canoe provide a continuity of communal activity; (4) The resultant prestige for the whole group strengthens the authority pattern; (5) The cultural inter-responsibilities are reappraised and reinforced by a continuum of ceremonial activity that is religiously based; (6) The canoe provides group satisfaction in strong naval defence, or did so if this was the purpose of the project. In peace the satisfaction is in having a good canoe for public purposes; (7) If the canoe was made for extra-community presentation, then foreign relations were strengthened for the benefit of the whole group – either economic or military ... This function of a complex artefact is a mechanism for assuring the perpetuity of society in the face of danger or threat.<sup>87</sup>

Although built primarily as a weapon of war, the peacetime function of *drua* as the mechanism for economic activity and inter-island and international relations and, in particular, its function within the tribute system, were critically important. As Tippet states,

They figured in the political patterns of honorific presentations, not as the carrier or transporter of the presentations, but as the object of them. [For instance, the *Musu Waqa* was] a canoe built, not as a memorial, but as a gift and symbol or pledge of loyalty from one kingdom to a more powerful one.<sup>88</sup>

Hage and Harary used both mathematical and anthropological tools to model and explain the complex exchange network that linked the differing islands of the Lau and to understand the means by which differing islands obtained dominant or subservient positions in this network.<sup>89</sup> Bayliss-Smith et al. discuss this network in terms of relationships between Lau and Viti and Tonga. *Drua* and *drua* culture is the fulcrum of these networks, with *vesi loa* as the pivot pin.

In a sense the floristic resources of Kabara are an analogue of modern day strategic minerals. Just as the possession of titanium resources – important in aircraft construction – bestows strategic importance on the country possessing them, possession of large trees of *Intsia bijuga* [*vesi*] useful in canoe construction conferred a political advantage on Kabara.<sup>90</sup>

The nature of the *drua* culture described above requires a more generous assessment of Fijian voyaging ability and history than currently exists in the literature. The range of

87. Tippet, *Fijian Material Culture*, 84.

88. Tippet, *Fijian Material Culture*, 104.

89. Hage and Harary, *Island Networks*, 166–78.

90. S. Banack and P. Cox, 'Ethnobotany of Ocean-Going Canoes in Lau, Fiji,' *Economic Botany*, XLI, 2 (1987), 161.

opinion on Fijian sailing capability prior to European contact ranges from 'rather lubberly',<sup>91</sup> to capable but restricted to their home waters,<sup>92</sup> to blue-water and long-range capable and experienced.<sup>93</sup> Clunie maintains 'it has been firmly established that Fiji's indigenous craftsmen could not have built the canoe; while Tongans were still teaching Fijians to sail it in the 1840s, several generations after they had supposedly developed it'.<sup>94</sup> Clunie, in this article at least, does not provide evidence for this claim, but has since gained the agreement of Finney, Neich and others.

The counter-argument for a highly accomplished Fijian maritime culture comes from numerous sources. Hornell concludes

how the Fijians came to seize upon the Micronesian design and modify an outrigger type into a double canoe one we shall never know, but they certainly did accomplish this feat . . . The voyaging of the Marshall and Gilbert Islanders, noted navigators and confirmed wanderers, almost certainly went as far south as Fiji, and it was in all probability from these people that the Fijians gained the knowledge which led to the designing of that magnificent vessel the *ndrua*.

He also notes,

It is unquestionable that the Fijians were notably the superiors of the Tongans and the Samoans in the art of canoe designing, although the Tongans could claim the credit of being the more skilful carpenters and the more daring and experienced navigators.<sup>95</sup>

Shipwrecked sailors in the first decade of the nineteenth century, and Twynning in 1829, witnessed large-scale deployment of multi-vessel fleets at Bau and Laucala (Mariner) and throughout Fiji (Twynning) being expertly handled by Fijian crews.<sup>96</sup> If south-eastern Fiji was 'virtual Tongan colonies'<sup>97</sup> at this time and if *drua* were only introduced to Fijians by Tongans at the end of the eighteenth century,<sup>98</sup> they would appear to have gained access to a considerable number of high value craft (which would presumably all have gone direct to Tonga if Fiji were only a vassal state) and have mastered the seamanship necessary to operate them effectively in large fleet formations in less than a single generation. Certainly by the time of Williams and Wilkes (c. 1840s), Fijians were acknowledged masters of their seafaring craft and the use of *drua* and *camakau* was widespread in Fijian waters.

Although Williams assumed that the Fijians never ventured beyond the limits of their own archipelago, Lawry considered that Fijians were 'bold navigators, and make somewhat distant voyages'.<sup>99</sup> Wilkes described Fijians making 'very long voyages – to Tonga,

91. Clunie, 'Ndrua and Kalia', 11.

92. Thomson, *The Fijians*, 294.

93. Lawry, *Friendly and Feejee Islands*, 270; Wilkes, *Narrative*, 366.

94. Clunie, 'Ndrua and Kalia', 11.

95. Hornell, *Canoes of Polynesia*, 264, 344.

96. Dale, *Tonga Book*; Twynning, *Shipwreck and Adventures*.

97. Finney, *Voyage of Rediscovery*, 295.

98. Clunie, 'Ndrua and Kalia', 12.

99. Williams, *Fiji and the Fijians*, 85; Lawry, *Friendly and Feejee Islands*, 270.

Rotuma, and the Samoan islands'.<sup>100</sup> Speiser refers to Fijian voyages to the New Hebrides and commented that

the Tongans, conversely, have been lauded as bolder navigators and the presence of Tongan settlements and culture in far distant islands of Melanesia is instanced in support. Without calling into question the seafaring intrepidity of the Tongans, it must be pointed out that much of this seeming activity was involuntary and due as much to the inferiority of their sailing craft as to their innate enterprise and skill. Their sailing double canoe, the *tongiaki*, was a craft so clumsy and ill-designed that it could not beat to windward; when a favourable wind failed, there was no alternative but to change course or drift with the sail down.<sup>101</sup>

Hornell also considers that

[t]he possession of fine sailing canoes suitable for long voyages rendered inter-communication between the islands [of Fiji] so easy and frequent that there are no local variations of any consequence in the design of the various types; the description of the Mbau and Rewa canoes serves equally well for those of all other localities.<sup>102</sup>

Commenting more recently, Rayawa is also of the opinion that there was a Fijian origin for *drua* and notes that

[t]he Tongans were especially daring sailors who prized the superior Fijian canoes, often coming to Fiji to learn how to sail them . . . A study of canoes circa 1830 shows a wide range of specialised craft indicating a long and complex history. The [Fijian] hereditary canoe building class had thousands of years of skills and experience at their command and the vessels they produced reflect this.<sup>103</sup>

This, of course, can be equally applied to the *mataitoga*.

D'Arcy summarizes Fijian seafaring clans active in Fiji in the eighteenth and nineteenth centuries:

the fragmentation of power meant that quite small polities with naval capacity could exercise significant influence. They were often based on small islands off large islands, and included groups distinguished as 'sea people' . . . The tiny island of Bau was the *vanua* most clearly associated with sea people. Half a mile off the east coast of Viti Levu, Bau is only twenty acres in extent. It was founded in the 1750's, and rose to become Fiji's leading naval power by the 1840's . . . Bau's initial strength was based on an alliance between the founding chiefly line from the interior of Viti Levu and the seafaring inhabitants of Bau - the Butoni. Other seafaring people joined later. When disputes arose, the Butoni and Soso migrated to various localities around the eastern islands of Fiji. Bau was not alone on relying on sea people as the nucleus of

100. Wilkes, *Narrative*, 366.

101. F. Speiser, *Ethnology of Vanuatu: An Early Twentieth Century Study* (English translation by D. G. Stephenson, Bathurst, NSW, 1990), 250.

102. Hornell, *Canoes of Polynesia*, 305.

103. S. Rayawa, 'Fijian Canoes', *Domodomo*, XIII, 1, (Suva, 2001), 31.

its naval and military forces. Groups such as the Macui of Verata, the Vutia, Nukui and Nasilai fishermen of Rewa, and the Navatu people of Cakaudrove filled similar roles.<sup>104</sup>

Even if the Fijian sailing culture was limited or in some form of limbo prior to the *drua*, Fijian ancestors must have sailed at some point in their history and sail appears regularly in the heritage record. For example, Tippet records

[t]he great canoes are featured in many of the Fijian migration myths, especially those of the dispersion of the Nakauvadra people. Many of these vessels, like the *Kaunitoni* are remembered in name in the local traditions . . . in many villages in Kadavu the people know the names of the crafts that brought them to their current locations, and something of the routes taken.<sup>105</sup>

There are intriguing references from early historians of Fijian voyaging connections. The following references are all from Goetzfridt's 1992 review alone. In 1891, the New Zealand ethnographer Percy Smith referred to an indigenous navigational chart of Fiji whose 'parallel strings stretched on a frame' illustrated the 'constant movements of the sea driven before the trade-winds'. He also discussed '. . . traditional indications of Maori familiarity with Samoa and Fiji'. Burrows notes Futuna contact with Fiji which he maintains must have existed before European contact. MacGregor writing in Tokelau noted that voyages to Tonga and Samoa were common as were 'marauding expeditions to Fiji'. De Bisschop was informed by Futunan sources that two-way voyages to Fiji were being made 50 years previously with other canoes coming from Wallis. Lewis emphasizes evidence that points to the extensive voyaging of the Lapita people, particularly the passage through the Melanesian Trench to Fiji, and examines the ethnological and traditional evidence which indicates deliberate and extensive Melanesian voyaging into Micronesia, including Fijian voyages to Kiribati and Nukuoro (in modern day Pohnpei State, Federated States of Micronesia) and their subsequent adaption of principles of Micronesian canoe design. Koch noted that large sailing canoes, which ceased to exist during the nineteenth century, were used for voyages to Samoa with elders maintaining that voyages were also made to the Solomon Islands, Kiribati, Fiji, and Tonga. Finally, Neyret notes that the northern two-mast double canoe of New Caledonia was developed with sailing influence from Wallis and Fiji via Micronesia.<sup>106</sup>

104. D'Arcy, *People of the Sea*, 114–5.

105. Tippet, *Fijian Material Culture*, 105.

106. All of the following references are contained in Goetzfridt, *Indigenous Navigation and Voyaging*. The square bracketed page numbers following these references are those identified by Goetzfridt: S. Percy Smith, 'Notes on the Geographical Knowledge of the Polynesians, Part 1', *Australian Association for the Advancement of Science* (Report of the Third Meeting, Christchurch, New Zealand), 280–310 [184]; Edwin G. Burrows, *Ethnology of Futuna* (Honolulu, 1936) [75]; Gordon MacGregor, *Ethnology of Tokelau Islands* (Honolulu, 1937) [157]; Eric De Bisschop, *Kaimiloa d'Honolulu à Cannes par l'Australie et le Cap à bord d'une Double Piroque Polynésienne* (Paris, 1939) [82]; D. Lewis, *We, the Navigators* (Honolulu, 1972) [281–2]; Gerard Koch, *The Material Culture of Tuvalu* (Suva, 1983) [146]; Jean Neyret, 'Les anciennes pirogues doubles de Nouvelle-Calédonie',

Hage and Harary examine previous literature on the ‘Tonga-Fiji-Samoa network’ through anthropological and mathematical lenses and argue that instead of viewing Tonga as the ‘apex of a three-cornered network’ as seen by Kaeppler, a more global model linking Tonga, Fiji and Samoa in a single directed cycle of exchange can be discerned by considering the most valued prestige good each society obtained from one other society.<sup>107</sup> Each island society, therefore, provided one other society’s most valued marriage (and, more generally, prestige) good, joining all three societies in a direct cycle analogous to a system of generalized exchange. This cycle suggests that the Tongan monopoly on voyaging and trade may have been historically recent and Tonga, Fiji and Samoa were originally directly linked. This would be consistent with the findings of Barnes and Hunt.<sup>108</sup> Some confirmation of this comes from the Polynesian-speaking island of Nukuoro in the southern Carolines, where there are traditions of canoes from ‘Hiti’ (Fiji) visiting the island on several occasions. As Lewis pointed out, this ‘lies more than 1800 miles north-west of Fiji and neither winds nor currents would favour drift’.<sup>109</sup>

The oral and linguistic evidence from central Oceania also appears to strongly favor a long Fijian sailing history and cross-cultural influences. Taonui offers:

Rata is the second most well-known demi-god in the Pacific after Maui . . . Samoan narratives say Lata was a Fijian canoe builder who taught the Samoans and Tongans how to construct large double-hulled canoes. Tongan traditions say the guardian of the forests prevented Lasa from felling a tree to build a great canoe. During a subsequent struggle, Lasa caught the chief guardian, Ha-ele-feke, who agreed to help Lasa build the canoe and navigate it to Fiji.

He goes on to note that

[t]raditions concerning the history of ruling dynasties reflect frequent contact throughout West Polynesia . . . Other traditions describe contact with Niue and Fiji. A married couple expelled from Manu’a [Samoa] escaped to Niue. Their son Fitiaumua later conquered Fiji and Tonga . . . Recorded intermarriages reinforce this issue. One Tu’i Tonga married a daughter of the Tu’i Fiti (Fiji). His daughter, Laufafaetonga, married Tupainatuna, a Samoan. She later gave birth to her son in Fiji, with whom she returned to Samoa.<sup>110</sup>

## Conclusion

We contend that *drua* (*kalia/’alia*) represent a pinnacle of Oceanic technological design and innovation. The *drua* is arguably highly competitive against any other Oceanic

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*Bulletin de la Société d’Etudes Historiques de la Nouvelle-Calédonie* LXIV (1985), 44–8 [274].

107. Hage and Harary, *Island Networks*, 17; A. L. Kaeppler ‘Exchange Patterns in Goods and Spouses: Fiji, Tonga and Samoa’, *Mankind*, XI, no.3 (June, 1978), 246–52.

108. S. Barnes and T. L. Hunt, ‘Samoa’s Pre-contact Relations with Western Polynesia and Beyond’, *Journal of the Polynesian Society*, CXIV (2005), 227–66.

109. Lewis, *We, the Navigators*, 262.

110. R. Taonui, ‘Polynesian Oral Traditions’, in Howe, *Vaka Moana*, 32–8.

design on all points: speed, windward performance, size, construction, sail technology. Regardless of its design origin, the *drua* in its finished form was the product of a unique and indigenous cross-cultural collaboration that includes at least the societies of central and northern Oceania.

The greatly increased windward capability of the *drua* immediately reduced the uncertainty of return voyaging capacity (assuming the vessel itself withstood the rigors of the voyage), as well as giving increased speed and performance. Within the sphere of Tongan influence, this capacity was exploited to great advantage as evidenced by the complexity of the inter-island exchange and trade networks that followed in its wake, including increased martial and religious (especially Christo–Judaic) exchange as occurred with every sea-going power in the world at this time. The vessel movements between Fiji and Tonga, in particular, were almost certainly at their highest historical levels in the mid-nineteenth century, due to the extent of military and naval operations, diplomacy, trade and religious conversion and practice. Given the historical extent of the ‘Tongan empire’ using *tongiaki* class technology and the immensely increased capacity, especially to windward, that *drua* technology provided, it is interesting to speculate the extent it could have expanded if Europeans had not probed into central Oceania when they did. Would *drua* have reached Hawai’i and Aotearoa (New Zealand)? Would they have displaced the local designs as quickly as they did *tongiaki*? What would have happened to design and performance under the influence of new cultures and access to materials such as *Harakeke* (flax), *Totora*, and *Kauri* of New Zealand?

### Author biographies

Pete Nuttall is a Research Associate at the Pacific Centre for the Environment and Sustainable Development, University of the South Pacific. He leads a team researching the potential for Pacific Island Countries (PICs) to transition to low carbon sea transport futures, and has worked extensively on sustainability planning and policy in Aotearoa/New Zealand and the Pacific Islands. He lives on a wooden sailing ship, has sailed extensively in the Pacific Islands, and is in awe of the sailing heritage of Pacific peoples. Pete gained a PhD from Victoria University of Wellington on sail technology as a low carbon transport for Fiji and PICs drawing on their heritage of *drua*.

Colin Philp is the son of a naval architect and his mother is of Tongan and Fijian descent from the Lau Group of islands, the epicentre of *Drua* canoe-building heritage. He is an avid sailor and outrigger paddler, who has represented Fiji in Olympic yachting. Colin was co-founder of the Fiji Islands Voyaging Society, which led the Fiji revival in Traditional Navigation and Voyaging in 2009. He currently manages a small island resort northeast of Suva that focuses on community-based marine conservation and sustainable building practices using local materials and traditional knowledge. He is passionate about ocean conservation and assisting island communities.

Paul D’Arcy is Senior Fellow in Pacific History at the Australian National University (ANU). Born and raised in Otago, Aotearoa/New Zealand, his parents migrated from Liverpool in the late 1950s, from where a number of earlier generations had gone to sea. Paul completed his PhD at ANU on the sea cultures of Oceania. He is the author of *The People of the Sea: Environment, Identity and History in Oceania*. He draws inspiration from the many successes of community-based marine guardianship across the Pacific, and is currently working on problems in ensuring sustainable harvests in pelagic zones of the Pacific.